MAY METEORS.

IN Spring months meteoric observers can hardly expect very productive results. The weather is often fine and pleasant, it is true, but meteors are usually scarce, and an average night will not present more than about four or five per hour. In 1886, during the month of May, I counted 127 meteors in twenty-five hours of observation. In 1903, May, I saw seventy-two meteors in 18¼ hours, and, if allowance is made for time engaged in recording paths, the deduced horary number was about five.

I have noticed that at this season of the year there are comparatively few meteors leaving definite streaks. In July (last half) and August there are, however, a large proportion of streak-producing meteors, but the majority of these are obviously Perseids belonging to the great July-August shower. Some years ago I counted out the number of meteors with streaks seen by me in June and July (1873–1901), and the relative figures were :—

June, of 252 meteors, thirty-one had streaks, proportion 8 to 1.

July, of 641 meteors, 141 had streaks, proportion 4½ to 1.

It cannot be held that May offers any special inducement to meteoric observers, but some very interesting showers are visible. In the early part of the month there are the Aquarids, supposed to be connected with Halley's comet. At about the middle of May the Coronids are often active from radiants at about 231°+27° (near α Coronæ) and 246°+31° (ζ Herculis), and at the close there are the η Pegasids from 330°+26°, maximum on May 30.

There are many other showers from Hercules, Draco, Libra, Serpens, Scorpio, &c. Fireballs are tolerably numerous during the month, and they are apparently directed from a number of different radiants.

This epoch is likely well to repay investigation, as it has never been amply studied in past years. More observations should therefore be obtained, so that the leading showers of the present day may be ascertained.

Though the majority of streams are probably of annual occurrence, a few of them are undoubtedly periodical, giving perhaps only one pretty rich exhibition once in a long series of years. The latter class of shower would escape notice unless observations were maintained with great assiduity and regularity. As an instance of a rich periodical shower of this kind, I may mention that on 1879 August 21–25 I witnessed the flight of fifty-six bright meteors from a radiant at 291°+60°, near the star ο Draconis, but though I frequently endeavoured to re-observe this display, it never returned except under a very feeble aspect. W. F. DENNING.

NOTES.

THE annual conversazione of the Royal Society will be held at Burlington House on Wednesday next, May 8.

SIR JAMES DEWAR, F.R.S., has been elected a foreign member of the National Academy of Sciences, Washington.

THE Société chemique de France will celebrate its fifty years' jubilee by special meetings on May 16–18.

REUTER messages from Messina report that a violent eruption of Stromboli occurred at 10 p.m. on April 27. It was accompanied by a strong shock of earthquake, which shattered windows and caused other damage in the vicinity. The cable between the Lipari and Stromboli islands has been broken.

THE Meteorological Committee has appointed Mr. Ernest Gold, fellow of St. John's College, Cambridge, superintendent of instruments in the Meteorological Office, to the readership in dynamical meteorology established for three years from October 1. The readership is constituted from funds contributed by Dr. Arthur Schuster, F.R.S., and is tenable, under certain conditions, at any university in the United Kingdom.

THE exposition which is to be held at Berlin in connection with the fourteenth International Congress for Hygiene and Demography, on September 23–29, promises to be an interesting one. The fight against infectious diseases, principally colonial and tropical diseases, hygiene work of the State and municipality, especially the care of infants, provision of good drinking water, removal of waste, and the hygiene in schools, will be represented by many exhibits. In consideration of the importance of hygiene to private and public life, it has been resolved to keep open the exposition, which is to be held in the "Reichstag," to the end of September.

THE Destructive Insects and Pests Bill was read a second time in the House of Lords on Monday. The Bill is intended to grapple with several matters of importance to the agricultural world, and in particular with the disease called the gooseberry mildew. It provides that the Board of Agriculture may make such orders as are thought fit to prevent the introduction or spread of any particular insect, fungus, or other pest destructive to agricultural or horticultural crops, or to trees or bushes. The Bill gives the Board power to regulate the landing of plants and to authorise the removal or destruction of any diseased plant. Local authorities are empowered to pay compensation for any crops or trees so destroyed.

AT a special general meeting of the Geological Society, to be held on Wednesday, May 15, a new section of the bye-laws, providing for the election of women as associates, will be considered and voted upon. The first clause of the proposed new section reads as follows :—"Any woman who has distinguished herself as a geological investigator, or who has shown herself able and willing to communicate to the Society original and important geological information, or who has exercised signal liberality towards the Society, and is desirous of being elected, provided she be a British subject, or be domiciled in the British dominions or their dependencies, may, subject to the provisions hereinafter contained, be elected an Associate, the number elected being limited to forty."

AT the second National Poultry Conference, to be held at Reading on July 8–11, the discussions have been arranged under six sections, dealing respectively with poultry farming and production, breeding, hygiene and disease, women and the poultry industry, education and research, and commercial subjects. Among papers to be read at the conference we notice the following :—the Mendelian laws and their application to poultry breeding, by Mr. C. C. Hurst; hybridisation experiments with Ceylon jungle fowl (*Gallus stanleyii*), by Dr. J. Llewellyn Thomas; the economic values of external characters, by M. Louis van der Snickt; parasitic liver disease in poultry, by Prof. F. V. Theobald; the influence of heredity upon the diseases and deformities of poultry, by Dr. H. B. Greene; methods of instruction in poultry-keeping, (*a*) in the United Kingdom, by Mr. F. W. Parton, (*b*) in Australia, by Mr. W. H. Clarke; results of experimental work, (*a*) in the United Kingdom—(*b*) in America, by

Prof. J. E. Rice. Full particulars of the conference can be obtained from the honorary secretary, Mr. Edward Brown, 12 Hanover Square, W.

THE annual conversazione of the Selborne Society was held in the theatre and halls of the Civil Service Commission, Burlington Gardens, on Friday, April 26, and between five hundred and six hundred guests were present. Lord Avebury presided, and was supported by the Earl of Stamford and the Hon. Walter Rothschild. During the course of his presidential address, which dealt with the study and appreciation of nature, Lord Avebury said:—"To the wise and good, indeed, Nature is divine, but to understand her we must love her, we must feel that we are one with her. People often talk of the supernatural. This is, no doubt, mainly a matter of definition. To me, Nature is all-sufficient and all-covering. What they regard as supernatural seems to me either natural or non-existent. Whatever exists is part of Nature. It is not that those who hold these views wish to lower the so-called supernatural, but that those who hold the opposite opinion seem to us to limit and lower Nature. Nature is infinite. Every fresh discovery reveals new sources of wonder; every problem that is solved opens others. The telescope and microscope create for us new worlds; the spectroscope has answered questions which Comte thought were obviously beyond the range of human ken." During the evening Mr. E. J. Bedford, one of the first to apply photography to the study of birds, gave an illustrated lecture on "Bird Architecture." Among the exhibits were the original manuscript of Gilbert White's "Natural History of Selborne," and the original letters of Mulso to Gilbert White.

To vol. lxxxvi., part ii., of the *Zeitschrift für wissenschaftliche Zoologie*, Mr. W. S. Marshall, of Madison, Wisconsin, contributes an elaborate account of the development and structure of the cellular elements of the ovary in two species of insects, based on investigations recently conducted by himself in Berlin. The wasp known as *Polistes pallipes* forms the subject of the first paper, in which, after reviewing previous work, the author discusses the developmental history of the three types of cells—oöcytes, nurse-cells, and epithelial cells—throughout the whole or the greater part of their existence. In the second paper, where *Platyphylax designatus* is the species discussed, the author opens up newer ground, since very little is known as to the details of the developmental history of the Phryganeidæ.

WE have received three publications from the Bergen Museum, the *Aarsberetning* for 1906, together with the third part of the *Aarbog* for 1906 and the first part for 1907. From the first of these we learn that attention continues to be directed to extending the educational value of the museum, especially as regards the fauna of the country, several new groups of Norwegian animals having been added to the exhibited series. In the third part of the *Aarbog* for 1906 Mr. J. A. Grieg continues his description of the echinoderms collected in the late cruise of the *Michael Sars*, dealing in this instance with the starfishes, while the bryozoans obtained on the same expedition form the subject of an article by Mr. O. Nordgaard in the issue for the current year. The stone-implements of western Norway are discussed by Dr. A. W. Brögger in the last-named part.

PROF. A. J. EWART contributes to the Proceedings of the Royal Society of Victoria, vol. xix., part ii., a list of identifications of Australian plants, several of them being corrections of previously recorded names. A new genus of the Compositæ, Bellida, founded on a West Australian species, is described and figured. Two new species, *Daviesia mesophylla* and *Eriostemon intermedius*, are recorded, and the characters of *Romulea cruciata*, a native Irid known as onion grass, allied to *Romulea bulbocodium*, are noted.

IN Florida the growers of citrus fruits are troubled with the whitefly, *Aleyrodes citri*. A Bulletin, No. 88, of the Florida Agricultural Station, prepared by Dr. E. W. Berger, deals with the methods of combating the pest. Special value is attached to the efficacy of fungi parasitic on the whitefly, of which a red fungus, *Aschersonia Aleyrodes*, a yellow species of Aschersonia, and a brown fungus are known. It is recommended to scatter spores of the fungi by spraying, or to introduce cultures on leaves or trees.

As a consequence of the shortage in the Indian jute supply, the Government of India delegated Mr. R. S. Finlow, attached to the Agricultural Department as a jute specialist, to ascertain whether new localities suitable as to soil and climate could be discovered outside the ordinary area of jute cultivation that lies along the lower courses of the Ganges and Brahmaputra rivers. In Mr. Finlow's report, issued as Bulletin No. 3 of the Agricultural Research Institute, Pusa, it is stated that jute growing promises to be successful in Bihar, where it will take to some degree the place of indigo. With regard to districts inspected in Madras, Bombay, and Central Provinces, the prospects are less certain, and it will be necessary to await the results of experimental cultivation.

NO branch of botany received more attention from Prof. Errera and his pupils than the examination of organic compounds in plants. The late professor was therefore essentially qualified to prepare a practical course on the microscopical identification of such compounds in plant tissues. A small brochure, consisting of the notes on this subject drafted by him for the benefit of students taking botany for a doctorate in science at the University of Brussels, has been published by Dr. J. Massart. Some of the reactions are based on researches made in Brussels, others are taken from the writings of Macallum, Gilson, and Moll.

A GENERAL review of the evolution of scientific methods for improving the sugar-cane by hybridisation is presented in the paper published in the *West Indian Bulletin*, vol. vii., No. 4, under the joint authorship of Sir Daniel Morris and Mr. F. A. Stockdale. The possibility of raising seedling canes was authenticated by Harrison and Bovell in 1888; this was shortly followed by the production of numerous seedlings, some of which have proved greatly superior to previously existing strains. Success was thus obtained, but the results were quite fortuitous, and the parentage of the seedlings could not be determined. Finally, the somewhat difficult task of removing the anthers from young flowers and pollinating with pollen from a known type was performed by Lewton-Brain in 1904. The paper also furnishes an indication of future lines of work and a summary of results already obtained. Coloured illustrations of six of the best known West Indian varieties are given.

UP to the present time no deposit of coal has been discovered in the Sahara and in the whole of North Africa. An attempt to ascertain whether coal really exists to the south of Algeria has been made by Mr. E. F. Gautier,

and the results of his explorations have been communicated to the Société d'Encouragement (Bulletin, vol. cix., No. 3) by Mr. A. Carnot. No trace of coal was found, but an extensive Carboniferous area was traversed between Figuig and In Salah, and it is possible that coal exists concealed beneath the vast Cretaceous plateaux.

AT the meeting of the Institution of Civil Engineers on April 16, papers were read on the Pyrmont bridge, Sydney, New South Wales, by Mr. P. Allen, and on the swing bridge over the river Avon at Bristol, by Mr. W. H. B. Savile. The Pyrmont bridge across Darling Harbour is 1210 feet long. There are three 30-feet openings in the Sydney approach for vehicular traffic to wharves, while on the Pyrmont side the Darling Island railway passes under a steel bridge of 25-feet span. Electric motive power is used for working the swing span and for roadway gates and for lighting, the whole being operated by one man from a conning tower in the centre of the swing span. The Bristol bridge, which is 600 feet long, carries a carriage road and a double line of the Great Western Railway. The main feature is the swing span, which is 202 feet 6 inches long, pivoted on a pier in the river.

THE current issue of the Transactions of the English Ceramic Society (vol. vi., part i.) shows that much useful work in the discussion of subjects relating to the clay-working industries is being done by the society, which meets at Tunstall, Staffordshire. The contents comprise seven original memoirs, four of which are written by Dr. J. W. Mellor, the hon. secretary of the society, and deal respectively with the determination of the amount of soluble salts in clays, excess air in firing kilns, the sulphuring and feathering of glazes, and the influence of high temperatures on porcelain pyrometer tubes. In the other papers, Mr. W. Burton reviews the different methods of recording high temperatures, Mr. W. F. Murray discusses the pottery oven of the future, predicting that gas firing, at present unknown in the earthenware trade, will fifty years hence be universal, and Dr. F. Shufflebotham deals with the hygienic aspect of the pottery industry.

THE Bureau of Science of the Government of the Philippine Islands publishes the *Philippine Journal of Science* in three sections, dealing with:—A, general science; B, medical science; and C, botany. The numbers in each section appear as rapidly as material is available, and the latest number to hand (A, vol. ii., No. 1) shows that the papers attain a high standard of excellence. There are four original memoirs, on the terpene oils of *Manila elemi*, by Mr. A. M. Clover; on the action of sodium on acetone, by Mr. R. F. Bacon and Dr. P. C. Freer; on a new subspecies of Philippine Cicindelidæ, by Mr. W. Horn; and on the proximate analysis of Philippine coals, by Mr. A. J. Cox. In the last-mentioned paper the author shows that the directions for coal analyses recommended by the American Chemical Society are inapplicable to certain Philippine coals. These coals are easily detected by the shower of incandescent carbon particles which are driven off when the sample is subjected to rapid heating. This mechanical loss can be overcome by expelling the volatile matter very slowly so that the escaping gases do not ignite. This smoking-off method approaches the conditions existing in a coke-oven.

AN interesting account of the Blue Grotto at Capri has been published by Mr. F. Furchheim, of Vienna, 2 Seilerstätte, District I. for private circulation. It is reprinted from the *Deutsche Rundschau für Geographie und Statistik* (January), and deals with the changes which have taken place in the grotto, considered particularly in reference to variations of sea-level, from the times of the ancients down to the present day, as revealed by historic documents and references.

THE *Revue scientifique* (April 13) publishes an interesting account of graphic methods of calculation in the form of an inaugural address by Prof. Maurice d'Ocagne. As is well known, Prof. d'Ocagne introduced the method of "nomography," in which calculations are performed by drawing lines across a diagram with a ruler. His use of the method for solving algebraic equations is well known. That a piece of squared paper forms an excellent substitute for a slide rule when used in this way is so simple and obvious that it is surprising how often the fact is overlooked.

THE relations of science to questions of national interest forms the subject of a number of the papers in the current issue of *Science Progress*. Mr. James Johnstone discusses the international fishery investigations, and directs attention to the unsatisfactory position of fishery statistics, particularly in connection with Great Britain. The relationship of mining to science, in the hands of Mr. W. E. Lishman, forms the basis for further reflections on England's neglect of science. Dr. John Wade replies to Prof. H. E. Armstrong's attacks on our present medical curriculum; and Prof. Armstrong contributes an address on "The Opportunity of the Agriculturist," and draws a timely moral from the efficiency of the United States Agricultural Bureau. Mr. R. H. Biffen also shows the need of agricultural research in his paper on modern plant-breeding methods. Mr. Shipley, in his paper on the danger of flies, puts in one good word for the motor-car, which, with all its faults, affords no nidus for flies.

IN a paper contributed to the *Physical Review* for March, Mr. W. R. Turnbull discusses the forms and stability of aëroplanes. The author describes laboratory experiments made with planes and singly and doubly curved surfaces, and draws curves showing the lift, drift, and coordinate of the centre of pressure expressed graphically in terms of the angle of inclination. He rightly directs attention to the supreme importance of longitudinal stability. This is a factor which is apt to be neglected by practical aëronauts whose main thought is to build flying machines in the hope of winning prizes. The data in question will afford useful material so far as they go, for studying the stability of various types. This stability depends, however, on other factors also, such as the moment of inertia and the position of the centre of gravity of the proposed apparatus. Another interesting note was recently contributed to the *Comptes rendus* by Captain Ferber, dealing with the forms of propellers calculated to give the maximum efficiency.

MR. F. W. ASTON writes in reply to Mr. A. A. Campbell Swinton's letter, which appeared in NATURE of April 18 (p. 583), to say that when Mr. Swinton has the opportunity of comparing the full text of the Royal Society paper with his own results of 1898 he will recognise the wide dissimilarity of conditions, effect, and explanation between them. The mica mill referred to in the abstract is designed to show that inside the dark space, under conditions of moderate pressure and continuous current, the mechanical energy flowing towards the kathode in the path of the kathode rays is far in excess of that flowing

in the opposite direction, a phenomenon which, under the conditions of Mr. Swinton's experiments—very low pressure and discontinuous current—is actually reversed.

REFERENCE was made in NATURE of April 4 (p. 543) to a paper by Mr. C. E. Moss on the "Geographical Distribution of Vegetation in Somerset." The paper is published by the Royal Geographical Society, but did not appear in the *Geographical Journal*.

A CORRESPONDENT asks for a reference to the latest discussion of the stadium of Eratosthenes and the official or Royal Egyptian stadium mentioned in a recent review in NATURE (April 11, p. 553). The information required will be found in "Griechische und römische Metrologie," by F. Hultsch (Berlin, 1882), and in Dr. Dreyer's "History of the Planetary System" (Cambridge, 1906).

A SECOND edition of "The Textile Fibres: their Physical, Microscopical, and Chemical Properties," by Dr. J. Merritt Matthews, of the Philadelphia Textile School, has been published by Messrs. John Wiley and Sons, of New York, and Messrs. Chapman and Hall, Ltd., in this country. The book has been re-written, and is intended to bring together all the material available for the study of the textile fibres. The price of the volume is 17*s*. net.

MESSRS. WITHERBY AND CO. announce the forthcoming publication of a limited edition of a work on "The Vertebrate Fauna of North Wales," by Mr. H. E. Forrest. The work will be a history of the mammals, birds, reptiles, amphibians, and fishes to be found in that part of Wales lying north of the Dovey Estuary, illustrated with plates depicting notable haunts of typical species, portraits of Pennant and other former recorders, and a coloured map of the district.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN MAY:—

May 1. 11h. Mars in conjunction with Uranus, Mars 0° 46′ S.
,, Mars. Apparent diameter = 12″·54.
1–6. Epoch of Aquarid meteors. Radiant 337° – 2°.
6. 10h. 11m. Minimum of Algol (β Persei).
16. 7h. 13m. to 10h. 27m. Transit of Jupiter's Sat. III. (Ganymede).
21. 12h. Jupiter in conjunction with Neptune. Jupiter 1° N.
26. 12h. 14m. Minimum of Algol (β Persei).
,, 16h. 6m. to 16h. 52m. Moon occults θ Libræ (mag. 4·3).

COMET 1907*b* (MELLISH).—An extension of the ephemeris given by Miss Lamson and Frederick, computed by Dr. Strömgren, appears in No. 4092 (April 20) of the *Astronomische Nachrichten*, and gives the calculated daily positions of the comet up to May 10. This object is now barely one-tenth as bright as when discovered, and, according to the elements, was nearest to the earth on April 10·98.

THE RING OF MINOR PLANETS.—Some very interesting facts are educed in a discussion, by Dr. P. Stroobant, which appears as an extract from the *Annales d'Observatoire Royal de Belgique*, vol. ix., part iii.; Dr. Stroobant's subject is the constitution of the ring of minor planets, and he considers the relative distribution, the masses, and the classification of the first 512 of these bodies. After giving a very abbreviated history of the discovery and study of asteroids, the paper discusses the *lacunae* in the grouping of the minor planets, and also the grouping in regard to their mean distances from the sun. A decided maximum occurs between the limits marked out by rings respectively 2·55 and 2·85 astronomical units from the sun, 199 of the asteroids considered revolving in this annulus.

From a discussion of the available data concerning the magnitudes and probable diameters of asteroids, it is found that nearly all the asteroidal matter is concentrated near to the middle of the ring in the neighbourhood of the mean solar distance of 2·7, whilst further analysis shows that, as a general law, the smaller asteroids are relatively less numerous in the richest zones. At the end of the paper Dr. Stroobant tabulates the 512 asteroids in order of their mean distances from the sun, and gives the mean movement, the mean distance, and other data for each.

POSITIONS OF PHŒBE, 1898–1904.—No. 3, vol. lx. (pp. 45–85), of the Harvard College Observatory Annals contains the measured positions of Phœbe, the ninth satellite of Saturn, during the period 1898–1904.

The places of the standard stars employed were taken from the C.P.D. for the epoch 1875·0, and, should greater accuracy be required, all the material for a second reduction is included in the present memoir; it will only be necessary for such a reduction to determine the places of the standard stars with greater accuracy.

OBSERVATIONS OF THIRTY-THREE VARIABLE STARS.—In Bulletin No. 110 of the Laws Observatory, University of Missouri, are published the preliminary results obtained from the observations of thirty-three variable stars, the light-curves and periods of which are as yet imperfectly known. The bulletin gives a list of the stars considered, with their places for 1855·0, followed by a brief discussion of the results yet obtained for each star. These results are compared with previously published elements, and in some cases the light-curves are reproduced.

THE ITALIAN PROMINENCE OBSERVATIONS, 1877–1883.—No. 5, vol. xxxvi. (p. 54, 1907), of the *Memorie della Società degli Spettroscopisti Italiani* contains a series of notes on the prominence observations made at Palermo and Rome from 1877 to 1883. These notes give the atmospheric conditions for each observing day, and brief remarks on any observation of especial interest, and should prove useful in any discussion of these valuable observations.

THE SPECTRUM OF MIRA.—A brief discussion of the spectrum of Mira, photographed at the Lowell Observatory on January 11, is published by Mr. V. M. Slipher in No. 3, vol. xxv. (p. 235, April), of the *Astrophysical Journal*. The region shown on the plate includes Hα, Hβ, Hγ, and Hδ, all of which are bright and increase in intensity in the order given. The series of absorption bands commences at λ 4584, possibly at λ 4463, and appears to extend beyond the region photographed, *i.e.* beyond λ 7000. Vanadium absorption is strongly represented. A comparison of this spectrum with that obtained by Stebbins, at Lick, in 1902, shows that Hβ (and probably Hα) was more intense during the more recent maximum. On the other hand, the series of dark bands appears to have been more intense, and to have extended further into the ultra-violet, in 1902.

THE HARVARD COLLEGE OBSERVATORY.—Prof. E. C. Pickering's report of the work done at the Harvard College Observatory during the year ending September 30, 1906, sounds a note of disappointment at the lack of financial support given to the schemes for astronomical work on well organised lines which he has formulated. The amount of meridian and photometric work accomplished was on the usual immense scale, and it is hoped that when the 60-inch Common telescope is completed the visual work will be greatly extended to the faintest stars.

On the Henry Draper memorial photographs Miss Cannon studied 691 stellar spectra and classified them. Three stars, H.P. 934, H.P. 3030 and +44°.3639, were found to show the second series of hydrogen lines. Mrs. Fleming also found numerous variable stars and stars having peculiar spectra on plates taken with the 8-inch Draper, the 8-inch Bache, and the 24-inch Bruce telescopes respectively. A great amount of work was also performed at the Arequipa station and at the Blue Hill Meteorological Observatory.